

On the job: Data analysts focus school improvement efforts

By Joellen Killion and G. Thomas Bellamy

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Help Wanted: School-based data analyst. Teacher to support school improvement by collecting, organizing, analyzing, and displaying data about student achievement and school factors associated with achievement. Involves attendance at a variety of meetings and using data to stimulate conversation about teaching and learning in the school. Requires commitment to student achievement and school improvement, measurement and data analysis skills, and ability to frame and support group discussions about the data that lead to action. \$3,000 annual salary supplement.

Apply to principal.

Understanding and using data about school and student performance are fundamental to improving schools. Without analyzing and discussing data, schools are unlikely to identify and solve the problems that need attention, identify appropriate interventions to solve those problems, or know how they are progressing toward achievement of their goals. Data are the fuel of reform.

Because data abound, schools must become data savvy. Everyone needs to understand what information is available about the school and its students and what data are relevant to the school's immediate needs. Committees need to review data related to decisions and actions they are considering. Data collection needs to be planned to guide formative and sum-mative evaluation of programs and projects. Ongoing analysis of data provides insights into mid-course changes necessary to reach established goals.

In short, using data separates good schools from mediocre schools. Schools that are increasing student achievement, staff productivity and collegiality, and customer satisfaction use data to inform and guide their decisions and actions. Data use essentially sets a course of action and keeps a staff on that course to school improvement and student success.

Adams Twelve Five Star Schools in Northglenn, Colorado helped its schools become data connoisseurs in its newly redesigned school improvement process. Revitalizing School Improvement (RSIP) was designed and implemented in 1997 to increase student achievement. The process responded to the superintendent's goal to sustain the district's long-standing commitment to decentralization and school-based shared decision making, and at the same time to focus more directly on student learning. The existing school improvement process left too many loopholes for focusing on issues distant from student academic success.

The district launched RSIP in the 1997-98 school year with a pilot group of 11 schools. During the 1998-99 school year, another 15 schools were added to the pilot, and during the 1999-00 school year, the remaining schools are implementing the process.

Using data is central to RSIP. To support data analysis at the school site, the district created the role of a school-based data analyst to strengthen school improvement efforts and to focus school-based decision making on student learning.

What are they?

The school-based data analyst is a teacher who is a member of the school's leadership team and a support to Student-Focused Action Teams, school action research teams that are responsible for developing and testing interventions to achieve school improvement goals. The data analyst organizes information about the school and community to facilitate the school's goal setting. Once goals are set, he or she collects and organizes baseline data, helps teams measure the results of proposed changes, and evaluates results once these are implemented. In order to focus the school's attention on needed improvements, he or she re-organizes data collected for various reports and provided to the school by the district and state.

Because the data analyst is a teacher and purposely not an administrator, access and interest in data by other teachers increases. Teachers, because they have little formal training in data collection, analysis, or interpretation, often are suspicious of data. Yet, when another teacher presents data to his or her colleagues, their mutual trust fosters collaborative inquiry about interpretation and use of the data. A data analyst builds teachers' confidence in understanding and using data while also diminishing the threat data often poses.

Principals report that school-based data analysts know the school, know what questions teachers will ask, understand the student population, and have a vested interest in the work. "The utilization of a school-based data analyst provides accurate, current, and appropriate information to individual building stakeholders. Where district information is general and has a district focus, school information is targeted specifically to our needs, activities, and results," said one principal.

Data analysts report that they help their schools make more "student-centered" instructional decisions. Because they're on site, they are convenient to teachers and principals, and can provide timely responses and assistance. From the perspective of the data analysts, their advantage is that they know their schools. "It provides an on-site collegial process that is convenient, allowing for timely meetings, collection, feedback, etc. It is also good to have someone who is inherently interested in the process. The principal, staff, and team members get clear, understandable reports on their school's data. The school's staff gets additional guidance on what to do with data, and, as such, makes better decisions," said a data analyst.

What do they do?

Data analysts collect, organize, analyze, display, and facilitate discussion of school data. Schools are bombarded with external views of what their problems are – from prospective consultants, special interest groups, parents, staff members, politicians, and so on. Data analysts help schools focus on their own particular problems, set locally appropriate goals, identify a course of action, and assess progress toward these goals. This is particularly important because change efforts that respond to a school's own priorities are more likely to persist (Berman & McLaughlin, 1977).

In order to improve, schools must first identify problems that prevent them from being the best they can be. Data analysts help schools focus their improvement efforts on the "right problem" – one over which the school has control, that is clearly and narrowly defined, and that has high potential for affecting student effort and learning. Too often, school improvement efforts fall short of their expectation because they fail to identify the right problem or the right course of action.

A school-based data analyst does not replace the need for district research and evaluation specialists. Data analysts depend on accurate and well-organized district and state data for their work. However, they take the data a step further. Since district and state data are seldom disaggregated in ways that help a school really focus its efforts, school-based data analysts use district and state data sources, and go beyond them to identify particular patterns in their school's achievement. For most school-based data analysts, being able to identify the strengths and weaknesses in student knowledge and skills is the core of their role.

Another aspect of data analysts' work is organizing data that already exist in files and reports, but which are mostly unusable because they are discrete or unknown. Data analysts compile school portfolios that include multiple indicators of a school's performance. When the data are compiled in one place and organized in formats that are easy to understand, they are accessible and useful to those making decisions. To get started in the role, an experienced data analyst advises new ones

to take time to find out what data are available at the school and from the district and to be persistent in getting the data.

Data analysts help School Leadership Teams, Student-Focused Action Teams, and even individual teams know what data are needed to answer their questions. According to one data analyst, "They don't know what they want or need. They want abstract information about climate, work habits, and attitudes. I have to help them get more concrete and figure out what specific information will help them. Too often, they aren't sure what they need to know, just that they need to know it. I end up asking lots of questions."

School-based data analysts provide frequent information about school concerns. If schools wait for their annual reports or data from external sources, they miss important chances to adjust their actions more frequently, learn as organizations, and increase the likelihood of achieving their goals. In order for data to guide improvement, feedback cycles need to be shorter than is typical of reporting cycles. On-site data analysts can provide weekly or monthly reports that provide formative assessments of schools' efforts to address their identified problems.

More importantly, a school-based data analyst creates greater ownership of problems and solutions at the school level. Asking a teacher to prepare data and facilitate discussions about the data's meaning leads school teams to look carefully at the discrepancy between where students are and where they should be. Discussion about what the data mean, what might be possible causes of the current state, and what might be done generates the motivation and energy to solve the real problems schools face.

What makes the role work?

Simply creating the role of data analyst will not achieve the results described. For data analysts to be successful, districts must be willing to invest in selection, development, ongoing support, and clearly established norms. The Adams Twelve Five Star Schools provides an example of doing this well.

Selection

Data analysts are selected at individual schools through a process established by each school. The district provides a list of recommended qualifications of and responsibilities for data analysts to guide the school's decision. (See list above.)

In schools currently involved with RSIP, data analysts vary significantly. Some are regular classroom teachers; others are special education or Title I teachers. Some are the school's computer teacher or a mathematics teacher. Some are kindergarten teachers and others are the school's information specialists (librarians). Teachers who apply for the role of data analyst do not need to be mathematical wizards or statisticians. They must want to learn, be willing to

invest time in their own development, and be excited about what they can contribute to their colleagues.

Training

Data analysts participate in two days of training provided by the staff development and curriculum and instruction departments. The training helps data analysts understand the district assessment system and how to analyze and use data from district and state assessments. They also receive training in basic data analysis, interpretation, and display processes. Part of the training is focused on ethical and responsible use of data and confidentiality and integrity of data. Data analysts examine both simple and complex examples of reports prepared by data analysts in previous years. After identifying their schools' goals, data analysts work to identify the questions their colleagues want to answer and begin to collect data to answer those questions.

The training is brief but it offers a framework for the role and responsibilities of a school-based data analyst. Quarterly district meetings provide more opportunities to share work, discuss common issues, and learn from other data analysts and outside experts. Data analysts are able to discuss work in progress with other data analysts. Since data analysts requested more training, extension training in Adams Twelve includes basic and advanced training in Excel and Access and use of the district's student data system.

Financial Support

Data analysts receive a \$3,000 annual stipend during their first year, later reduced to \$1,500 annually. Currently, stipends are paid from the superintendent's contingency fund as an indication of her support for the role and RSIP. The higher first-year stipend was established because of the expectation that the first year's work would include developing a school's data system, creating templates for collecting and analyzing data, establish schoolwide protocols for data use, and establishing the role in the school. Theoretically, once the data system is in place, the updating would require less effort and time.

In fact, data analysts have told the district that the stipend is backwards. In their first year, because they are just beginning to understand their role, their productivity is less than in following years. During the second year, once they and others understand their role, their work blossoms.

Data analysts have suggested that \$3,000 should be the annual stipend for all analysts. They also have asked the district to explore providing them some release time, particularly at larger schools, easier access to computers, and more training.

Principal Support

Data analysts benefit from their principals' guidance, support, and visible endorsement for their role. Principals need to work closely with their data analysts, especially during the first year, to determine the types of data available in the school, how to organize data for easy access by various teams, and establish priorities for the data analysts' work. Without this support, many data analysts flounder, unsure what they should do and whom to help.

School-Level Decision Making

The role of the data analysts and the entire RSIP program works well in Adams Twelve Five Star Schools because of its history with site-based shared decision making. Schools are comfortably fluent with local decision making, have fostered a culture of collaboration, and are committed to being involved in decisions that most closely affect them. In addition to site-based shared decision making, the district has a norm for allowing schools to design interventions to solve their own problems. The district has clear expectations of schools, has a rigorous curriculum for all students, and encourages schools to determine the most appropriate path to achieve those expectations. Because Adams Twelve schools differ dramatically in student demographics and achievement, a single solution will rarely meet the needs of all sites. Schools have adopted programs and approaches that are best suited to their students, communities, and staffs.

While these norms may not be prerequisites to success with school-based data analysts, they certainly facilitate it. Since school staffs are experienced in consensus decision making, collaborative work, and facilitation of teamwork, they are comfortable working with data analysts and see them as instrumental in providing information and support for their work.

What have we learned?

School-based data analysts strengthen school improvement efforts. Data analysts increase schools' use of data and strengthen improvement efforts. Schools can access and study specific, organized data to answer their questions about programs and student achievement. As a result, their school improvement efforts are more on target. Schools no longer select arbitrary goals, but rather identify core problems and set goals to align with them. Schools slow down their actions and are not rushing to implement untested strategies to solve problems. Instead, they research possible interventions and conduct mini-pilots to determine which intervention is most appropriate for its students and staff. Schools are more thoughtfully analyzing formative data to make mid-course corrections and to avert potential problems with implementation.

For each step in the school improvement process, the data analyst provides critical information to guide the work of school teams. Without easy access to this "up-to-the-minute" information, school improvement efforts may be derailed or

ineffective. When clear, current, and easily understood data are available, success is almost guaranteed.

Principals value the school-based data analysts, according to results of a recent survey of schools participating in the first two years of the pilot. They report that the data analysts free them to focus on other matters and help them make data more accessible and useful to teachers. One principal said "this position supports our collaborative efforts to address educational success for all students."

For principals, the real value of the data analyst is focusing school improvement on teaching and learning. Sometimes schools select areas to target that are distant from the classroom. For example, efforts to improve parent participation or reduce student smoking on campus, while important, may not be the right problems to address especially if the school wants to increase student achievement. When data analysts share data about student performance and facilitate discussion about the implications of those data, goals related directly to teaching and learning are inevitable.

Training is critical

Adams Twelve Five Star Schools provides training and ongoing support for its data analysts, but they need and want more. Introductory training is designed to help them understand their role and equip them with basic skills so they can begin their work. As data analysts assume more responsibility for their work and their work becomes more sophisticated, they will benefit from advanced training. They need additional training in data management, data analysis, software appropriate to their work, and facilitating discussions about data.

District support is important. The district's role in data management is not diminished with school-based data analysts. In fact, districts will find, as did Adams Twelve, that how data are provided to schools either facilitates or inhibits data use. Working with principals and data analysts, the district is revamping some of its reporting systems and data management processes to facilitate data use at individual schools.

Besides providing data to schools in ways that are easy to understand and use, the district must be willing to provide data to more people. Previous processes of sharing data only with school principals sometimes limited the use of data. Principals are so overwhelmed with information that they often overlook potentially useful information. Data analysts facilitate the sharing of information and need greater access to those data that relate to their schools. Opening the access to data increases the chances that more people will see and use data.

Conclusion

The role of school-based data analyst has helped schools in Adams Twelve Five Star Schools become data-driven organizations. Through access to more data, teachers and principals are able to identify the "right" problems and choose the best course of action to solve those problems. Efforts to improve schools and raise student achievement are more focused and productive. Today, even individual teachers are seeking the assistance of their school-based data analyst to collect data on their students' performance to help them adjust their instructional practices to meet the needs of all students. Data analysts' sophistication with data analysis, interpretation, and display is increasing daily. The district also is able to stay on course with its improvement goals, help schools achieve their individual school improvement, and raise student achievement.

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Two short, related articles follow here.

Writing a job posting

A school-based data analyst needs a set of special skills. Here are skills outlined by Adams Twelve Five Star School District, Northglenn, Colorado.

- Has basic computer skills (such as data display, graphing, charts, spreadsheets, Internet).
- Understands district assessments.
- Is interested in research and
- statistics.

- Reads extensively.
- Has strong communication skills, ability to do presentations, facilitate discussions.
- Has a "big picture" orientation.
- Has strong organizational skills.
- Appreciates diverse perspectives.
- Willing to support school improvement.
- Has integrity.
- Is respected by the staff.
- Flexible and quick learner.*
- Able to ask good questions to help others interact with data and determine what they need to know.*

* Added by individuals currently serving as data analysts.

How data changed two decisions at Adams Twelve

1. Did the students really say that?

The school's new data analyst attended a meeting of the Student Climate Committee just as it was concluding a discussion about how to respond to concerns raised in a student survey. A few questions from the data analyst revealed that the committee did not know which students had completed the survey and which students had identified a particular problem. The analyst volunteered to do some further examination of the responses and the committee agreed. His analysis revealed that the problem the committee identified was not schoolwide, but localized to 9th and 10th graders. He also noted that more of the survey respondents were 9th and 10th graders who had completed the survey in their required English classes; over one quarter of the juniors and seniors had not completed the survey.

This disaggregation of the data convinced the School Climate Committee to reconsider its course of action.

2. Do our students need to spend more time writing?

One of the district's elementary schools was disappointed in student performance on the state writing assessment. Teachers were certain students just needed more writing assignments. Just as they were ready to adopt guidelines about how many writing assignments teachers would give each marking period, the data analyst suggested studying the results further. She wanted to compare the school, district, and state writing assessment results to determine if a particular aspect of writing performance was related to students' poor performance. After comparing the results, the data analyst could not conclusively identify the area of writing that

was most problematic. She surveyed teachers to determine how they teach writing and how much time their students spend on writing tasks similar to those being tested. The analyst found that the time devoted to writing and the teachers' instructional approaches were remarkably inconsistent. This helped the staff realize that standardizing the number of writing assignments would not address the problem. Instead, they needed to re-examine their instructional practices and become more consistent in instruction and time across all grades.

About the authors

Joellen Killion is director of special projects for the National Staff Development Council, 10931 W. 71st Place, Arvada, CO 80004-1337, (303) 432-0958, fax (303) 432-0959, e-mail: NSDCKillio@aol.com.

G. Thomas Bellamy is dean of the School of Education at the University of Colorado at Denver, Campus Box 106, P.O. Box 173364, Denver, CO 80217-3364, (303) 556-2844, fax (303) 556-4479, e-mail: tom_bellamy@ceo.cudenver.edu